**This is the 24+6 pins DELL PSU male (FCI PowerBlade 51721 series) connector**

| Pin Number | Pin Name | Description |
|---|---|---|
| 1 (A1) | PS_KILL | 3.3V st-by output control\ pin, short to GND at server |
| 2 (A2) | +12V_CS | Current share - for balance load between parallel PSU |
| 3 (A3) | GND | Logic/control ground |
| 4 (A4) | 3.3V | 3.3V Stand-By output |
| 5 (A5) | A0 | I2C device address bit 0 select |
| 6 (A6) | 3.3V | 3.3V Stand-By output |
| 7 (B1) | GND | Logic/control ground |
| 8 (B2) | spare | PWM input for fan speed control |
| 9 (B3) | GND | Logic/control ground |
| 10 (B4) | 3.3V | 3.3V Stand-By output |
| 11 (B5) | SDA | I2C bus DATA signal |
| 12 (B6) | PS_ON | Main 12V output control pin |
| 13 (C1) | GND | Logic/control ground |
| 14 (C2) | Tach1 | Open collector fan speed signal |
| 15 (C3) | GND | Logic/control ground |
| 16 (C4) | 3.3V | 3.3V Stand-By output |
| 17 (C5) | SCL | I2C bus CLOCK signal |
| 18 (C6) | VG | AC input presents and above minimum level |
| 19 (D1) | Present | Power supply seated |
| 20 (D2) | spare | Logic/control ground |
| 21 (D3) | GND | Logic/control ground |
| 22 (D4) | 3.3V | 3.3V Stand-By output |
| 23 (D5) | S_INIT/ALERT | 3.3V Stand-By output |
| 24 (D6) | POK | Power output OK |

Warning: Control interface was 3.3V only. Do not connect to 5V circuit.

Power output pins:

| Pin number | Description |
|---|---|
| PB1 | GND return for main output |
| PB2 | GND return for main output |
| PB3 | GND return for main output |
| PB4 | +12V main output |
| PB5 | +12V main output |
| PB6 | +12V main output |
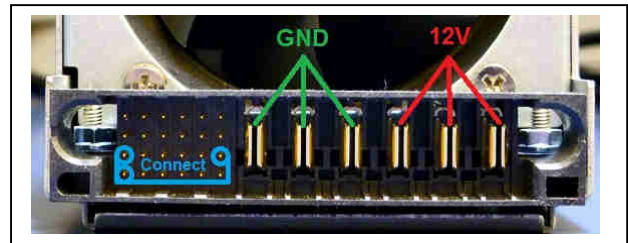


**Notes: Mods**
Step 1 - Connect A1 to GND (jumper to B1) for run 3.3V standby supply.
Step 2 - Connect B6 to GND (jumper to C1) for run main 12V output. Only works after Step 1 completed.
Step 3 - Connect B2 to GND (jumper to B3) for slow down fan. The PSU fan was designed for cooling part of server. By default, the fan works at full speed.
At this stage the completed mods will give an output of 11.9 to 12V DC.
Step 4 - Connect A2 to +12V via a 470ohm resistor to raise output voltage to 12.5V DC.

**Additional Notes –**

**Dell DPS-500CB A**

This supply is rated at 502 watts output and 12 Volts at 41 amps.

Testing showed this supply to have an efficiency of 82% and unity power factor with a load of 43 amps which is actually slightly higher than its 41 amp rating.

**Power Up Jumpers:** Pin B4 to A4 and D5 to C5.

This can be done easily without jumper wires as the pins can be bent together and soldered.

**Power Terminals:** Two left large terminals are - 12V and two right are + 12V.

These terminals must be paralleled to be able to handle full load rating of the power supply.

**Voltage Adjust:** There are no obvious voltage adjust potentiometers internally to the supply however the voltage can be made to rise from 12.5V to 12.85 by jumpering A2 to A5.

**Fan Speed Control:** This fan has no known external fan speed control but is not required as it is reasonably quiet.

**HP DPS-600 B:**

This supply is rated at 600 watts output and 12 Volts at 47 amps. Testing showed this supply to have an efficiency of 81% and unity power factor with a load of 42 amps. The supply is also known as a DL380 G4.

**Power Up Jumpers:** Pin A1 to B2 to C3.

This can be done easily without jumper wires as the pins can be bent together and soldered.

**Power Terminals:** Two left large terminals are - 12V and two right are + 12V.

These terminals must be paralleled to be able to handle full load rating of the power supply.

**Voltage Adjust:** A 5k ohm potentiometer connected between D3 to B3 will allow some voltage adjustment.

The voltage can be adjusted from 12.5V to over 13.8V but should not be adjusted over 13.5V as the power supply will shut down on overvoltage at 13.8V. A

**Fan Speed Control:** A 5K to 10K ohm potentiometer connected across the 12V output with the centre wiper connected to pin C1 will allow control of the fan speed. A better alternative to this would be to install and connect an LM34 temperature sensor as described at the end of this write-up. This will automatically control fan speed dependent on power supply temperature.

**Dell NPS-700AB A or 7000814:**

This supply is rated at 700 watts output and 12 Volts at 57 amps. Testing showed this supply to have an efficiency of 82% and unity power factor with a load of 43 amps. Dell has a second version of this supply which is Model 7000814-0000 with identical specifications. These power supplies do not have a fan shield. The fan runs at very high speed and should have some form of protective screen mounted to the case.

**Power Up Jumpers:** Pin B1 to A1 to B6.

B1 to A1 can be joined together and soldered but a short jumper is required to go from this junction to B6.

**Power Terminals:** There are 6 power pins to the right of the small pins. The three left pins are the -12V and the three right are +12V. These terminals must be paralleled to be able to handle full load rating of the power supply.

**Voltage Adjust:** There appear to be two ways to adjust the power supply voltage. Jumpering pin A2 to positive will raise the voltage to approximately 12.5V. The NPS-700AB has an internal potentiometer VR601 (right one of two) that will adjust the voltage from 11.85V to 12.85V. If you increase voltage with VR601 I recommend you don't go above 12.5 volts to be sure the power supply does not shut down on overvoltage.

**Fan Speed Control:** A 5K to 10K ohm potentiometer connected across the 12V output with the centre wiper connected to pin B2 will allow control of the fan speed. A better alternative to this would be to install and connect an LM34 temperature sensor as described at the end of this write-up. This will automatically control fan speed dependent on power supply temperature.

**Dell PowerEdge 6650 Model 7000245:**

This supply is rated at 900 watts output and 12 Volts at 72 amps. Testing showed this supply to have an efficiency of 79% and unity power factor with a load of 41 amps.

**Power Up Jumpers:** Pin C3 to B3 to A3.

They can easily be joined together and soldered without the need for a wire jumper.

**Power Terminals:** There are 7 power pins to the left of the small pins. The four left pins are the +12V and the three right are -12V. These terminals must be paralleled to be able to handle full load rating of the power supply.

**Voltage Adjust:** Connecting a 10K ohm potentiometer from pin A1 to ground will allow you to adjust voltage from 12V to 13.5V.

The power supply will shut down on overvoltage at 13.5 volts so do not increase voltage above 13.25V. A fixed 1K ohm resistor from A1 to ground will raise the voltage to approximately 13V.

**Fan Speed Control:** Unknown at this time but fans are relatively quiet so none required.

**Optional Fan Speed Control Methods:**

On both the HP DPS-600 and Dell NPS-700AB A power supplies the fan speed can be controlled in a few different ways.

1) This is the simplest way and requires just a switch to jumper C1 to ground on the DPS-600 or B2 to ground on the NPS-700AB. This will reduce the speed to a more reasonable speed for indoor use but you must remember to put the fan on high speed if you plan to draw a large load on the supply.

2) A second method is to connect a 5k to 10k ohm linear potentiometer across the 12 volts and connect the centre terminal (wiper) to the same terminals as the ground above. This will allow an adjustable fan speed control.

3) The third and best way to control fan speed is to install an LM34 temperature sensor on the main output transistor heat sink. The sensor is connected across the 12 volts with its centre terminal connected to the fan control pin as in the above examples. The sensor will output a voltage of 1 to 2 volts over the temperature range of 38 to 94 degrees Celcius which is within the required voltage range required to control the fan speed. Refer to the LM34 data sheets available on the internet for the correct sensor connections.